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Integrating oral health curricula into nurse practitioner graduate programs: Results of a US survey

Maria C. Dolce, PhD, RN, CNE, FACHE (Associate Professor)[1], Judith Haber, PhD, APRN, FAAN[2], Judith A. Savageau, MPH[3], Erin Hartnett, DNP, APRN-BC, CPNP (Program Director)[4], & Christine A. Riedy, PhD, MPH[5]

ABSTRACT

Background and purpose: Nurse practitioners (NPs) are a significant segment of the US primary care workforce and have a pivotal role in improving access to oral health (OH) care. The purpose of this research was to assess OH curricular integration in primary care NP programs and to examine factors that influence integration and satisfaction with graduates' level of OH competence.

Methods: A cross-sectional, national survey of NP programs (*N* = 466) was conducted using an electronically distributed 19-item, self-administered questionnaire. Data analysis included univariate, bivariate, multivariate statistics, and logistic regression modeling.

Conclusions: The large majority of pediatric, family, and adult–gerontology primary care programs are educating NP graduates about OH. Significant factors promoting integration and satisfaction with graduates' level of competence included the presence of a faculty champion and routine teaching by a dental professional or nondental OH expert.

Implications for practice: With adequate OH education, NPs are ideally positioned to integrate OH and primary care services in practice, thereby, improving access to OH care.

Keywords: Curriculum; oral health; primary care.

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Introduction

In 2000, the United States Surgeon General's Report, *Oral Health in America* (United States Department of Health and Human Services, 2000), increased awareness about the importance of oral health (OH) to overall wellness and initiated a national call for action to educate all health professionals about OH (United States Department of Health and Human Services, 2003). This call to action highlighted the need for curricular revision and interprofessional training to advance the integration of OH care and primary care practice. More than a decade later, the Institute of Medicine (IOM) underscored the central role of all primary care providers in OH promotion and disease prevention and the essential need for enhanced training and education (IOM, 2011a; IOM, 2011b). In 2014, the Health Resources and Services Administration (HRSA), US Department of Health and Human Services (HHS), propelled this movement by leading an expert panel in the development of a core set of interprofessional OH competencies for all primary care providers, including nurse practitioners (NPs), nurse midwives, physicians, and physician assistants (PAs) (HRSA, HHS, 2014). In response to recommendations from the IOM, the United States Department of Health and Human Services, Oral Health Coordinating Committee (2016) authored the HHS Oral Health Strategic Framework 2014–2017 to advance the national OH agenda including the integration of OH and primary health care.

This call for action compelled bold and innovative initiatives to transform NP education and advance the integration of OH and primary care practice. In 2017, the National Organization of Nurse Practitioner Faculties released a nationally validated set of entry into practice core competencies for all NPs. A list of suggested curriculum content aligned with the NP Core Competencies included OH as a specific area of assessment to support development of independent practice competencies (NONPF, 2017).

[1]*Stony Brook University School of Nursing, Health Sciences Center, Stony Brook, NY,* [2]*The Ursula Springer Leadership Professor in Nursing, NYU Rory Meyers College of Nursing, New York, NY,* [3]*Department of Family Medicine and Community Health, University of Massachusetts Medical School, Worcester, MA,* [4]*NYU Rory Meyers College of Nursing, New York, NY,* [5]*Oral Health Policy and Epidemiology, Harvard School of Dental Medicine, Boston, MA*

Correspondence: *Maria C. Dolce, PhD, Stony Brook University School of Nursing, Stony Brook, NY 11794-8240. Tel: 631-444-3792; Fax: 631-444-3136; E-mail: maria.dolce@stonybrook.edu*

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Two US academic nursing institutions have been at the vanguard of changing the landscape of NP education and practice. New York University (NYU) Rory Meyers College of Nursing and Northeastern University School of Nursing have been advancing interprofessional education to enhance nurses' OH competencies with an emphasis on the oral–systemic health connection. Moreover, their respective programs and curricular innovations promote integrated, patient-centered models of care delivery to improve health outcomes, particularly for vulnerable and underserved populations. In 2011, NYU Rory Meyers College of Nursing launched a national program, *Oral Health Nursing Education and Practice*, to prepare nurses to integrate OH care into nursing practice (Dolce, Haber, & Shelley, 2012). Faculty at NYU Rory Meyers College of Nursing designed and tested an innovative educational and clinical approach for integrating OH in the history, physical examination, risk assessment, and management plan completed by primary care NP, medical, and PA students and clinicians. The innovation transformed the traditional head, ears, eyes, nose, throat (HEENT) examination to HEENOT to include an oral examination (Haber et al., 2015). Northeastern University School of Nursing, in partnership with Harvard School of Dental Medicine, created and tested the *Nurse Practitioner and Dentist Model for Primary Care* (*NPD Model*), an innovative interprofessional collaborative practice model that integrated primary care and dental care services within the Harvard Dental Center. The *NPD Model* was designed to improve the health of older adults living with chronic health conditions, particularly diabetes and hypertension. The primary care NP focused on chronic care self-management and provided annual wellness examinations. The *NPD Model* provided an interprofessional learning environment for NP and dental students to develop competencies in oral–systemic health and collaborative practice for improving patient and population health outcomes (Dolce et al., 2017a).

In 2016, the Center for Integration of Primary Care and Oral Health was established at Harvard School of Dental Medicine/Harvard Medical School in partnership with University of Massachusetts School of Medicine, through a cooperative agreement with HRSA, to serve as a national resource for systems-level research on OH integration into primary care training. Systems-level research activities included the conduct of nationwide surveys to assess the depth and breadth of OH curricular integration into primary care training across 14 primary care specialties, including this research on NP education programs. The purpose of this study was to assess OH integration in NP programs in the United States and to examine factors that influence curricular integration and satisfaction with graduates' level of OH competence. The primary research questions were the following: 1) What is the current level of OH education across pediatric, family, and adult–gerontology primary care NP programs?; 2) What are the influencing factors that promote OH curricular integration?; and 3) What are the influencing factors that promote satisfaction with graduates' level of OH competence?

Methods

Survey development

Based on a review of the literature (Dolce, Parker, & Werrlein, 2017b; Dolce et al., 2012, 2017a; Haber et al., 2015; Langelier, Glicken, & Surdu, 2015), a 19-item survey was developed by the survey team to assess OH integration in primary care NP programs nationwide. The survey aligned with the content in 11 companion surveys concurrently distributed to physician residency program directors in pediatrics, medicine–pediatrics, family medicine, internal medicine, obstetrics–gynecology; program directors in nurse–midwifery, PA studies, and geriatric medicine fellowships, and deans of allopathic medical, osteopathic medical, and dental schools.

The survey included 13 questions about OH curriculum integration (e.g., hours and days of training, curriculum topics), presence of dental or nondental professionals in teaching OH, awareness and use of educational resources (e.g., *Smiles for Life: A National* OH *Curriculum* [Clark et al., 2010]), curriculum components, barriers to the inclusion of OH in the curriculum, learner evaluation methods, attitudes toward integration of OH, and satisfaction with learner's OH competencies. Five demographic questions asked about the geographic location, size of the community, number of NP students trained per year, length of tenure as an NP program, and current position of the person completing the survey. One final question asked individuals to self-identify as a "best practice" NP program in OH curriculum integration and indicate their willingness to be contacted for a future study. Only that last question identified survey participants, and the remainder of the survey solicited responses anonymously. Content validity was established by an interprofessional national panel, with expertise in OH and OH curriculum integration in primary care, through reviewing, providing feedback, and editing the survey.

Data collection

The 2017 Member Directory of the American Association of Colleges of Nursing and the Pediatric National Certification Board's Directory of Certified Pediatric NP Programs were used to identify the national population of program directors (also recognized by other titles including, but not limited to, coordinator, specialty lead, director of doctor of nursing practice) of family (n = 252), pediatric (n = 74), and adult–gerontology primary care (n = 133) NP programs. In cases in which the program director name and/or contact information was missing or incorrect,

phone calls were made to the dean's office at those schools requesting the name and contact information for the correct individual. Based on recognized online survey methodology strategies (Sue & Ritter, 2007), a Web-based survey development and data collection software application was used as an online platform (http://www.surveymonkey.com). An initial cover letter describing the survey's purpose, its voluntary nature, and anonymity of respondents was e-mailed to potential respondents 1 week in advance of the survey's distribution. The program director was encouraged to complete the survey or have an NP program-specific designee most knowledgeable about the curricular integration of OH complete the survey. With an estimated completion time of 15 minutes, the survey was distributed electronically to NP program directors between March and May of 2017. Guided by Dillman's Tailored Design Method (Dillman, 2007), three reminders were sent at two- to three-week intervals to improve the response rate. An additional strategy was to have the NP investigator send a personal e-mail reminder to all nonresponders, encouraging their participation. The study was approved by the University of Massachusetts Medical School Institutional Review Board (Protocol #H00012069) and Harvard School of Dental Medicine (17–0189) and received exemption waivers.

Data analysis

Data were analyzed using SPSS statistical software (SPSS V23, IBM Corporation, 2015). Univariate statistics (frequencies, percentages, means, and other measures of central tendency) were used to describe all survey items. Based on the categorical or continuous nature of the study variables, chi-square and t-tests were used to examine bivariate relationships. An alpha of $p < .05$ was used to denote statistical significance. Several questions were asked using a Likert response scale (1 = strongly disagree to 5 = strongly agree). These variables were dichotomized for bivariate analyses to strongly agree/agree versus neutral/disagree/strongly disagree. Objectives for subanalyses included assessing relationships that influenced the inclusion of OH in the curriculum, including but not limited to having a faculty OH champion, number of hours of OH in the curriculum, use of at least one evaluation method, and satisfaction with NP graduates' OH competence. Stepwise logistic regression analyses (both unadjusted and adjusted) were computed to identify significant factors related to our two outcome variables: 1) the number of hours of OH teaching in the curriculum; and 2) program directors' satisfaction with current levels of OH competence of NP graduates.

Results

Of the 459 NP program directors to whom surveys were distributed, a total of 230 responded, with a response rate of 50%. The respondents well represented all regions throughout the country, including the Northeast/Mid-Atlantic (26%), Midwest (32%), South (27%), and West (15%). The majority (63%) of respondents reported training NP students for more than 15 years to greater than 30 years (43%). Student enrollment in NP programs ranged from less than 10 (9%) to more than 30 (47%). Community service area sizes also incorporated most population census ranges from less than 150,000 to greater than 1,000,000 people.

The degree of OH education varied across pediatric, family, and adult–gerontology NP programs. The majority (86%) of responding program directors reported a range of 1 to 6 hours of didactic, nonclinical OH education in the NP curriculum. Lectures, workshops, online modules, and case studies were provided as examples of didactic teaching methods. All respondents (100%) of pediatric NP program directors ($n = 50$) reported that OH was covered in the curriculum. The large majority of responding family and adult–gerontology program directors, 93% and 84%, respectively, reported including OH in their curriculum. However, there was a small minority of responding programs that reported zero hours of OH education by FNP ($n = 8$; 8%) and adult–gerontology ($n = 12$; 16%) program directors.

Overall, the most prevalent OH topics covered (Table 1) were pediatric/infant oral screening examination (93%), medical conditions that affect OH (90%), oral cancer (87%), oral conditions that affect overall health (84%), and adult/adolescent oral screening examination (83%). The least covered topics were interprofessional education with an OH component (35%) and the application of fluoride varnish in a clinical setting (36%). When asked about the barriers that prevented teaching more OH within their NP curriculum, program directors cited time (61%), lack of faculty expertise (52%), and unspecified competing priorities (40%).

Among the NP program respondents, there were numerous uses of resource materials, dental and nondental professionals as teachers, and evaluation strategies used to teach and assess learners. Just over one-third (39%) of programs reported awareness of *Smiles for Life: A National Oral Health Curriculum* (Clark et al., 2010) developed by the Society of Teachers of Family Medicine. The use of *Smiles for Life* (Clark et al., 2010) in NP programs varied by course, with the highest utilization reported for Course 1: The Relationship of Oral to Systemic Health (58%), Course 7: The Oral Examination (58%), and Course 2: Child Oral Health (52%). Despite the majority (82%) of respondent NP programs reporting not having a formal relationship with a dental school, dental residency, or dental hygiene program, 17% indicated that routine teaching from a dental professional was included in their program. In addition, routine teaching from a nondental OH expert was reported by 33% of program

Table 1. Oral health topics covered in the respondents' NP curricula: pediatrics (*n* = 50), family (*n* = 106), and adult–gerontology (*n* = 74)

Domain: Topics	Pediatric, *n* (%)	Family *n* (%)	Adult–Gerontology, *n* (%)	Total (%)
Risk assessment				
Medical conditions that affect OH	40 (83.3)	93 (93.0)	64 (91.4)	90.4
Oral cancer	[a]	89 (88.1)	61 (85.9)	87.2
Oral conditions that affect overall health (e.g., periodontitis)	41 (83.7)	82 (83.7)	59 (83.1)	83.5
Effect of medications on OH	37 (75.5)	83 (83.0)	53 (75.7)	79.0
Caries/cavity risks and causes	48 (98.0)	84 (85.7)	39 (55.7)	78.8
Urgent/emergent oral issues (e.g., infections, trauma)	44 (89.8)	79 (79.8)	47 (66.2)	77.6
Assessment of the effect of OH on a patient's quality of life	41 (83.7)	66 (67.3)	44 (64.7)	70.2
OH evaluation				
Pediatric/infant oral screening examination (including teeth)	47 (95.9)	91 (91.9)	[a]	93.2
Adult/adolescent oral screening examination (including teeth)	41 (85.4)	83 (83.8)	57 (80.3)	83.0
Prevention intervention				
Fluoride risks, benefits, and promotion	46 (93.9)	76 (76.8)	31 (43.7)	69.9
Fluoride varnish indications and application	37 (75.5)	51 (51.5)	[a]	59.5
Applying fluoride varnish in a clinical setting	22 (45.8)	30 (30.6)	[a]	35.6
Communication and education				
Oral disease prevention/ anticipatory guidance (including brushing and flossing, no bottle in crib)	47 (95.9)	88 (87.1)	39 (54.9)	78.7
Interprofessional collaborative practice				
Interprofessional education with an OH component	19 (39.6)	30 (30.3)	28 (39.4)	35.3
Other topics				
Adult oral lesions (e.g., lichen planus, mouth ulcers)	[a]	88 (87.1)	52 (74.3)	81.9
Adult/geriatric OH issues (root caries, periodontitis, dentures)	[a]	70 (70.7)	62 (87.3)	77.6
Oral anatomy	38 (77.6)	76 (77.6)	49 (69.0)	74.8
Disparities in OH/social determinants of health	38 (77.6)	57 (57.6)	38 (53.5)	60.7
Pregnancy oral health issues	[a]	57 (57.6)	[a]	57.6

Note: OH = oral health.
[a]*Topic not applicable in the specialty program.*

respondents. Finally, the most common methods used to evaluate NP students on OH competencies (knowledge, skills, attitudes) were written/computer testing (51%), direct observation in a clinical setting (33%), and review of clinical documentation (27%). No evaluation of students on OH competencies was reported by only 20% of program directors. However, programs with a faculty OH champion were significantly more likely to use specific evaluation methods, including objective structured clinical examination (OSCE) ($X^2 = 5.03$; $p = .025$), simulation ($X^2 = 6.19$; $p = .013$), or direct observation ($X^2 = 9.58$; $p = .002$).

The presence of a faculty OH champion was a key factor influencing OH curriculum integration. Overall, programs that reported having a faculty champion were significantly more likely to provide 7 or more hours of OH curriculum ($X^2 = 14.67$; $p < .001$), evaluate students on their OH competencies ($X^2 = 4.92$; $p = .027$), cover interprofessional education with an OH component ($X^2 = 26.84$; $p < .001$), and be satisfied with the level of OH competency of their graduates ($X^2 = 10.97$; $p = .001$).

Results of our stepwise logistic regression analyses suggested significant factors that promote OH integration (≥4 hours) into the NP curriculum (Table 2). The presence of an OH faculty champion positively influenced integration (AOR [adjusted odds ratio] = 4.13; 95% CI = 1.78–9.59), along with routine teaching by either a dental professional (AOR = 4.92; 95% CI = 1.82–13.31) or a nondental OH expert (AOR = 2.52; 95% CI = 1.22–5.20). Programs with a formal relationship with a dental school or program were, however, not shown to be a significant factor for promoting OH integration. Also significant was the use of at least one evaluation method used to assess learner performance (AOR = 3.32; 95% CI = 1.14–9.69). Finally, compared with FNP programs, adult–gerontology NP programs were 69% less likely to have four or more hours of OH curriculum (AOR = 0.31; 95% CI = 0.14–0.72). The program type was not significantly related to the outcome for pediatric NP programs (compared with FNP programs).

Factors related to satisfaction with NP graduates' level of OH competence (Table 3) did not include the presence of an OH champion as in the previous regression analyses. However, department support for OH was a significant factor associated with program director's satisfaction with graduates' competence (AOR = 3.16; 95% CI = 1.52–6.57). As with the number of hours of OH in the curriculum, routine teaching by a dental professional and routine teaching by a nondental OH expert were also related to satisfaction with NP graduates' competence (AOR = 2.40; 95% CI = 1.06–5.44 and AOR = 2.12; 95% CI = 1.05–4.28, respectively). In addition, compared with FNP programs, adult–gerontology NP programs were 57% less likely to be satisfied with the current level of OH competence of graduates (AOR = 0.43; 95% CI = 0.18–0.99). As with our first outcome assessment, pediatric NP programs (compared with FNP programs) were not significantly related to program director satisfaction with OH competence of NP graduates. Finally, the use of at least one evaluation method was of borderline significance in its relationship with the program director's satisfaction with NP graduate competence in OH (AOR = 3.43; 95% CI = 0.95–12.41).

Discussion

Major assumptions underlying this national study were that OH is integral to overall health and an essential component of comprehensive health care. Nurse practitioners, with adequate education, are ideally positioned to improve access to OH care particularly for vulnerable and underserved populations (IOM, 2011a; IOM, 2011b). Overall, analysis of study findings revealed that the current degree of OH education in NP curricula varied across programs, with the highest level of integration seen in pediatric NP programs. Notably, 100% of responding pediatric NP program directors reported covering OH topics in their respective curriculum. Moreover, it was encouraging to discover that the majority of responding family and adult–gerontology programs were covering OH in their curriculum, with only 9% of responding program directors ($n = 20$) reporting no OH integration. Geriatric OH issues were covered in 71% of family and 87% of adult–gerontology responding programs. An opportunity exists to further strengthen geriatric OH education among family and adult–gerontology NP programs. Program directors and faculty can readily increase OH integration in geriatric education by incorporating *Smiles for Life Course 8—Geriatric Oral Health* (Clark et al., 2010) into their curriculum.

Perceived barriers to OH integration (time, faculty expertise, competing priorities) were consistent with those reported by US family medicine residency program directors (Silk, King, Bennett, Chessman, & Savageau, 2012). Although NP program directors indicated the use of OH resource materials, the majority (62%) were not aware of *Smiles for Life: A National Oral Health Curriculum* (Clark et al., 2010), an open-access, online interprofessional Web-based curriculum program. This finding differed from that of PA education programs, in which 85% of responding PA program directors who provide OH education were familiar with the *Smiles for Life* curriculum (Clark et al., 2010; Langelier et al., 2015).

The presence of an OH faculty champion surfaced as a statistically significant influencing factor in promoting OH curricular integration. Routine teaching by either a dental professional or nondental OH expert emerged as another significant factor. The distinction between teaching by a dental professional versus nondental OH expert was not significant. Both resources were effective in promoting curricular integration and increasing

Table 2. Factors related to the number of OH hours in respondents' NP curricula

4+ Hours of OH in Curricula Versus 0–3 Hours (Referent Group)	Unadjusted OR (95% CI)	Adjusted OR (95% CI) (Forward/Stepwise Entry)
NP program type		
Pediatric	1.80 (0.95–3.42)	0.63 (0.26–1.52)[a]
Family (referent)		
NP program type		
Adult–gerontology	**0.42 (0.22–0.79)**	**0.31 (0.14–0.72)**
Family (referent)		
OH champion		
Yes	**7.48 (3.74–14.95)**	**4.13 (1.78–9.59)**
No (referent)		
Department support for OH		
Yes	**1.97 (1.12–3.49)**	NS
No (referent)		
Routine teaching by a dental professional		
Yes	**9.83 (4.22–22.88)**	**4.92 (1.82–13.31)**
No (referent)		
Routine teaching by a nondental OH expert		
Yes	**3.85 (2.13–6.97)**	**2.52 (1.22–5.20)**
No (referent)		
Relationship with dental school, residency, or hygiene program		
Yes	**5.35 (2.52–11.35)**	NS
No (referent)		
Important for NPs to address basic OH needs		
Yes	1.14 (0.48–2.70)	NS
No (referent)		
Type of OH evaluation of students		
Any method(s)	**5.75 (2.47–13.40)**	**3.32 (1.14–9.69)**
None (referent)		

Note: NP = nurse practitioner; NS = not significant; OH = oral health. Bold values denote statistically significant findings.
[a]Both NP types (pediatric and adult–gerontology) were forced entries into the stepwise regression with FNP as the referent category.

satisfaction with graduates' level of competence in OH. This is an encouraging finding because there has been considerable national attention devoted to developing NP faculty as OH champions, and as experts in integrating OH in clinical courses beginning with using the HEENOT approach in the core Physical Assessment course, and weaving relevant oral–systemic health content into subsequent diagnosis and management courses (Darling-Fisher, Kanjirath, Peters, & Borgnakke, 2015; Darling-Fisher, Borgnakke, & Haber, 2017; Dolce, 2012; Dolce et al., 2012; Dolce et al., 2017a; Dolce, Aghazadeh-Sanai, Mohammed, & Fulmer, 2014; Dolce et al., 2017b; Haber et al., 2015; Haber et al., 2017; Hallas, Fernandez, Herman, & Moursi, 2015; Madios & Koromantzos, 2018; Mauri-Obradors, Merlos, Estrugo-Devesa, Jane'-Salas, & Lopez-Lopez, 2018).

Our findings reveal that increased attention to OH education is warranted, particularly across family and adult–gerontology NP programs. All family and adult–gerontology NP graduates must be educated about the

Table 3. Factors related to respondents' satisfaction with the current level of OH competence of NP graduates

Strongly Agree/Agree Versus Neutral/Disagree/Strongly Disagree	Unadjusted OR (95% CI)	Adjusted OR (95% CI) (Forward/Stepwise Entry)
NP program type		
Pediatric	**3.43 (1.77–6.86)**	1.63 (0.72–3.67)[a]
Family (referent)		
NP program type		
Adult–gerontology	**0.33 (0.16–0.69)**	**0.43 (0.18–0.99)**
Family (referent)		
OH champion		
Yes	**2.94 (1.53–5.66)**	NS
No (referent)		
Department support for OH		
Yes	**4.61 (2.34–9.07)**	**3.16 (1.52–6.57)**
No (referent)		
Routine teaching by a dental professional		
Yes	**4.01 (1.93–8.31)**	**2.40 (1.06–5.44)**
No (referent)		
Routine teaching by a nondental OH expert		
Yes	**3.35 (1.80–6.23)**	**2.12 (1.05–4.28)**
No (referent)		
Relationship with dental school, residency, or hygiene program		
Yes	**2.64 (1.28–5.44)**	NS
No (referent)		
Important for NPs to address basic OH needs		
Yes	**3.56 (1.03–12.33)**	NS
No (referent)		
Type of OH evaluation of students		
Any method(s)	**7.65 (2.27–25.74)**	**3.43 (0.95–12.41)**
None (referent)		

Note: NP = Nurse practitioner; NS = not significant; OH = oral health.
[a]*Both NP types (pediatric and adult–gerontology) were forced entries into the stepwise regression with FNP as the referent category.*

OH needs of adults and, in particular, older adults. The "weave" approach is a way to integrate clinical OH content because it relates to overall health for specific conditions. For example, evidence about the links between OH and diabetes is particularly strong (Darling-Fisher et al., 2015, 2017; Madios & Koromantzos, 2018; Mauri-Obradors et al., 2018) and is a paradigm exemplar of how to include OH considerations in the primary care assessment, diagnosis, and management plan, including collaboration and referral to dental colleagues, for patients with diabetes. Other strategies related to older adults include interprofessional simulations with NP, dental, and medical students that integrate cardiovascular disease and related OH issues or dementia and relevant OH conditions. Smoking cessation and oral cancer screenings are perfect clinical topics to integrate into what is already being taught in assessment and health promotion courses.

Exemplars in NP graduate programs also can serve as adaptive models for curriculum integration and graduate preparation in OH. One program is the collaboration between the Pediatric NP Program and Department of Pediatric Dentistry at NYU. An evidence-based, interprofessional clinical education program was developed to improve the oral–systemic health of infants and young children to decrease the risk for early childhood caries, the most common chronic condition of childhood (Hallas et al., 2015). Of note, NPs are authorized to order, apply, and receive reimbursement for fluoride varnish application in 47 states (American Academy of Pediatrics, 2017). Another program at NYU is *Teaching Oral-Systemic Health (TOSH)*, a tested collaborative education model that uses an interprofessional OH clinical simulation and case study method (Haber et al., 2017). Northeastern University's *Oral Health TIPS Model: Technology, Instruction, Practice, Service* is another example of a program designed to prepare primary care professionals across health disciplines with team-based, interprofessional competencies to integrate OH into comprehensive general health care, with an emphasis on health promotion and disease prevention for older adults (Dolce et al., 2014).

Several limitations of this study should be considered. First, the survey responses were self-reported and program directors may not have obtained detailed information from their faculty about OH integration at the course level, resulting in potential information bias. Second, the study did not include a gap analysis of curriculum plans and course syllabi. These study limitations were outweighed by the strong survey response rates across NP specialty programs and by the fact that all US regions were well represented.

Implications

Based on the study findings, we propose recommendations to promote the education and competency in OH among primary care NP providers. Recognizing the challenges of adding more content to overpacked curricula, we highly recommend the utilization of *Smiles for Life: A National Oral Health Curriculum* (Clark et al., 2010) as a modular, instructional tool to integrate OH into the NP curriculum. Faculty can simply assign relevant modules, across the lifespan, in preparation for simulations, clinical practice, and "flipping the classroom" (Betihavas, Bridgman, Kornhaber, & Cross, 2016). Faculty are encouraged to visit NYU's *Oral Health Nursing Education and Practice* Web site (http://ohnep.org) to access faculty resources including the *Interprofessional* OH *Faculty Toolkit for Primary Care* NPs tailored for primary care NP programs.

The cultivation of NP faculty champions and development of core competencies in OH are the linchpins for enhancing OH integration in NP programs. To create an awareness of the importance of OH to comprehensive care, we recommend reviewing the growing scientific evidence on the association between OH and chronic health conditions such as diabetes, cardiovascular disease, dementia, pneumonia, celiac disease, and cancer (Glick, 2014) and encouraging interprofessional dialog about addressing OH access barriers and disparities. We consider the *Smiles for Life* (Clark et al., 2010) curriculum as a knowledge framework for faculty enrichment and competency attainment in OH (Dolce, 2012).

Of the approximately 234,000 NPs licensed in the United States, 85% are certified in a primary care specialty and 78% provide primary care (American Association of Nurse Practitioners, 2016). Nurse practitioners are a significant segment of the US primary care workforce with a major role in broadening access to care and decreasing health disparities, particularly for vulnerable and underserved populations. With adequate OH training, NPs are ideally positioned to integrate OH and primary care services, thereby, improving access to OH care and contributing to reducing OH disparities. We recommend using the OH *Delivery Framework* (Ask-Look-Decide-Act-Document) as an approach for NPs in practice to address OH as an essential component of primary care (Hummel, Phillips, Holt, & Hayes, 2015). We support the development of policies to reconnect the mouth and the body, that is, NPs addressing OH as a component of comprehensive, patient-centered primary care. Further research exploring NP faculty perceptions of the barriers and facilitators of OH curricular integration will be beneficial for developing effective strategies for competency development and assessment. It is important to better understand the successful integration strategies and models used in pediatric NP programs. Further research is needed to adapt and test these models in family and adult–gerontology NP programs to promote curricular integration of OH.

Conclusion

In conclusion, current levels of curriculum integration and satisfaction with graduates' competence in OH vary across NP primary care programs in the United States. The majority of responding NP programs are educating graduates about OH and, thereby, strengthening the primary care NP workforce to improve access to OH care. It is incumbent upon academic graduate (master's and doctoral) NP programs and faculty to prioritize the integration of OH education as a required part of the NP curriculum. Consistent with the core competencies for interprofessional collaborative practice (Interprofessional Education Collaborative, 2016), collaboration with dental and nondental OH experts, and cultivation of OH champions to better prepare the primary care NP workforce are goals for actualizing the HSS OH Strategic Plan (United States Department of Health

and Human Services, Oral Health Coordinating Committee, 2016) for integrating OH with overall health in primary care and improving access to OH care.

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